

What is Claimed:

- 1 1. A method of using z-transform calculations to  
2 encode carrier signal independent data to a digital  
3 sample stream
- 1 2. A method according to claim 1, wherein said  
2 carrier signal independent data comprises digital  
3 watermark data.
- 1 3. A method according to claim 1, wherein location  
2 and parameters vary based on a position of the  
3 watermarking party in a distribution chain and what  
4 type and how much information that party needs to  
5 encode and decode in a watermark.
- 1 4. A method of using z-transform calculations to  
2 decode carrier signal independent data from a digital  
3 sample stream.
- 1 5. A method according to claim 4, wherein said  
2 carrier signal independent data comprises digital  
3 watermark data.
- 1 6. A method according to claim 4, wherein location  
2 and parameters vary based on a position of the  
3 watermarking party in a distribution chain and what  
4 type and how much information that party needs to  
5 encode and decode in a watermark.

1 7. A method of analyzing deterministic and non-  
2 deterministic component of a signal, wherein said  
3 signal is comprised of a digital sample stream, for  
4 the purposes of encoding carrier signal independent  
5 data to the digital sample stream, and encoding said  
6 carrier signal independent data in a manner such that  
7 it is restricted to or concentrated primarily in the  
8 non-deterministic signal components of the carrier  
9 signal,

10 wherein said signal components consist of at  
11 least one of:  
12 a discrete series of digital samples; and  
13 a discrete series of carrier frequency sub-  
14 bands of the carrier signal.

1 8. A method according to claim 7, wherein said  
2 carrier signal independent data comprises digital  
3 watermark data.

1 9. A method according to claim 7, wherein location  
2 and parameters vary based on a position of the  
3 watermarking party in a distribution chain and what  
4 type and how much information that party needs to  
5 encode and decode in a watermark.

1 10. A method of using z-transform calculations to  
2 measure a desirability of particular locations in a  
3 sample stream in which to encode carrier signal  
4 independent data, wherein the desirability is  
5 comprised of a difficulty in predicting a component of  
6 the sample stream at a location which can be measured  
7 by an error function, wherein the component and  
8 location may be comprised of information regarding at  
9 least one of the following: wave, amplitude,  
10 frequency, band energy, or phase energy.

1 11. A method according to claim 10, wherein said  
2 carrier signal independent data comprises digital  
3 watermark data.

1 12. A method according to claim 10, further  
2 comprising a step of performing the z-transform of the  
3 input sample series.

1 13. A method according to claim 12, further  
2 comprising a step of performing an inverse z-transform  
3 to produce an estimated sample series including an  
4 estimate of the signal represented by the digital  
5 sample series.

1 14. A method according to claim 13, further  
2 comprising a step of computing an error function of

3 the estimated sample series versus the original input  
4 sample series.

1 15. A method according to claim 14, further  
2 comprising a step of using a computed error function  
3 data as a measure of the desirability of a location  
4 for encoding watermark information.

1 16. A method according to claim 14, further  
2 comprising a step of determining a maximized error  
3 function to determine an optimal watermark location  
4 for encoding.

1 17. A method of encoding digital watermarks at  
2 varying locations in a sample stream with varying  
3 envelope parameters.

1 18. A method of using z-transform calculations to  
2 determine portions of a signal which may be  
3 successfully compressed or eliminated using certain  
4 processing techniques.

1 19. A method of using z-transform calculations to  
2 determine portions of a signal which may be  
3 successfully compressed or eliminated using certain  
4 processing techniques, without adverse impact on  
5 signal quality.

1 20. A method of encoding a digital watermark into a  
2 digital sample stream such that the watermark  
3 information is carried entirely in most non-  
4 deterministic portions of the signal.

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